

EX PARTE OR LATE FILED

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Ex Parte Presentation  
Gen. Dkt. 90-314  
ET Dkt. 92-100  
ET Dkt. 92-9

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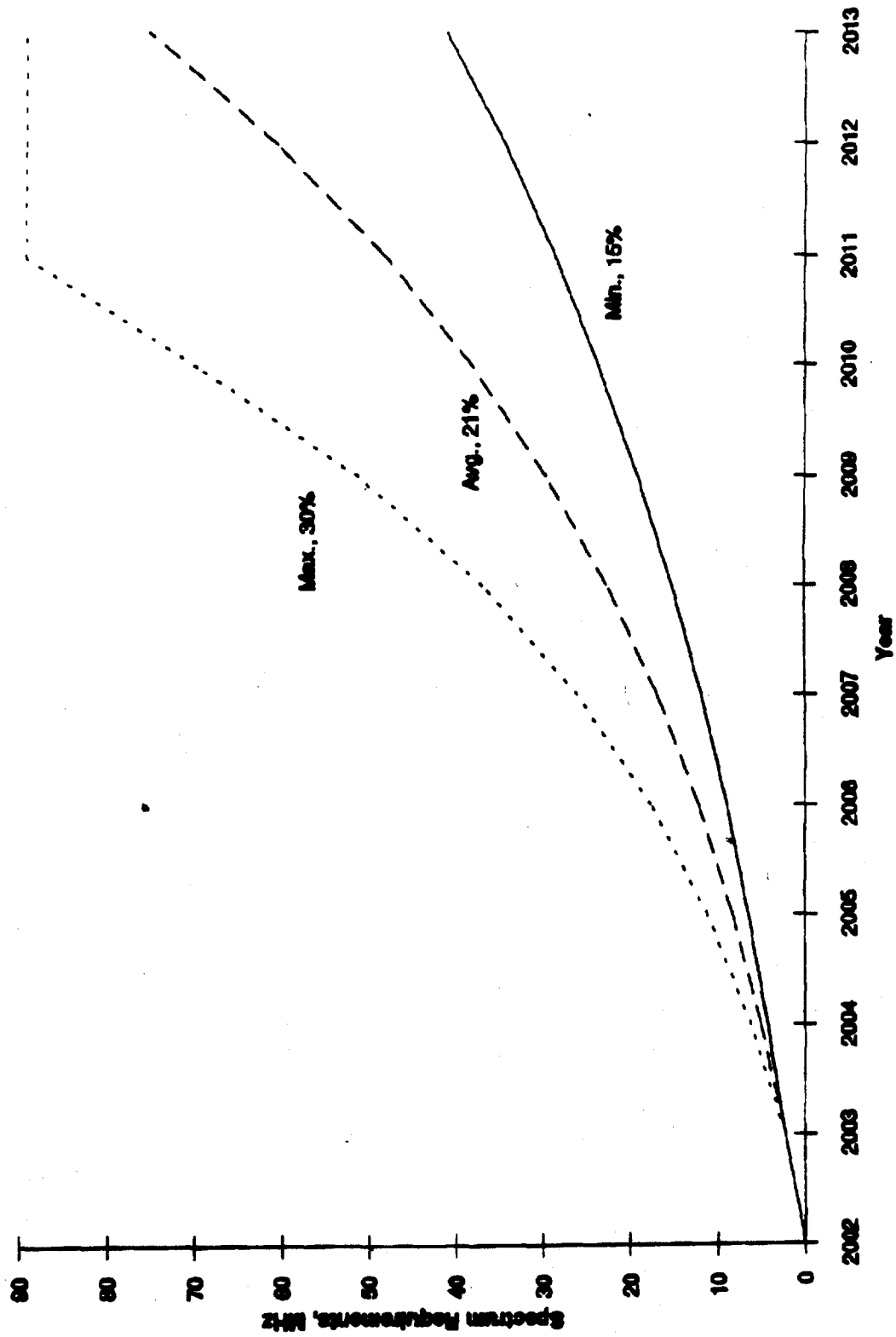
**PRESENTATION BY MOTOROLA INC.  
TO FEDERAL COMMUNICATIONS COMMISSION**

**USE OF 2 GHz EMERGING TECHNOLOGY BANDS  
BY IRIDIUM-TYPE SYSTEMS**

**MAY 11, 1993**

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**Projected growth in CONUS Spectrum Requirements for Iridium type Communications  
2 GHz Band (assuming 10.5 MHz available at L Band)**



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**PROJECTED CONUS SPECTRUM REQUIREMENTS**  
**FOR IRIDIUM-TYPE SYSTEMS**

- **BASED ON COMPUTER MODEL, IRIDIUM-TYPE SYSTEMS WILL NEED 12.8 MHz BY THE YEAR 2003 (I.E., END OF FIRST GENERATION)**
- **ADDITIONAL SPECTRUM NEEDED FOR IRIDIUM-TYPE SYSTEMS BEYOND THE YEAR 2003 (I.E., NOT COUNTING THE 10.5 MHz OF L-BAND ASSUMED AVAILABLE):**

<u>YEAR</u>	<u>GROWTH RATE</u>		
	<u>15%</u>	<u>21%</u>	<u>30%</u>
<b>2008</b>	<b>15.2</b>	<b>22.7</b>	<b>37.0</b>
<b>2013</b>	<b>41.3</b>	<b>75.6</b>	<b>89.5</b>

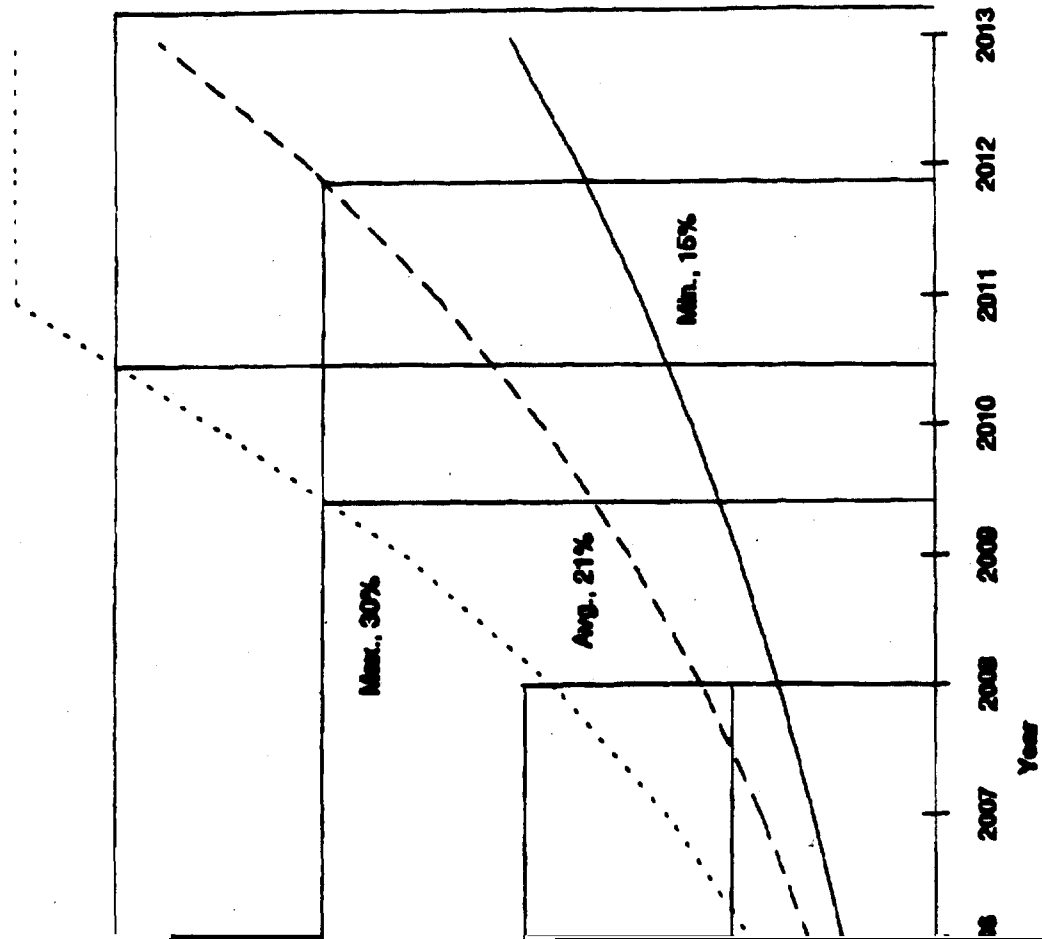
**NOTE: TOTAL MSS SPECTRUM REQUIREMENTS WILL EXCEED THESE FIGURES BECAUSE ABOVE PROJECTIONS DO NOT TAKE INTO ACCOUNT SPECTRUM NEEDED FOR NON-IRIDIUM-TYPE SYSTEMS**

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**2 GHz BANDS UNDER CONSIDERATION BY MOTOROLA TO  
SATISFY FUTURE IRIDIUM SPECTRUM REQUIREMENTS**

<b><u>BAND</u></b>	<b><u>PATH</u></b>	<b><u>REGIONS</u></b>	<b><u>DATE</u></b>
<b>1970-1980 MHz</b>	<b>EARTH-TO-SPACE</b>	<b>REGION 2</b>	<b>2005</b>
		<b>U.S.</b>	<b>1996</b>
<b>1980-2010 MHz</b>	<b>EARTH-TO-SPACE</b>	<b>GLOBAL</b>	<b>2005</b>
		<b>U.S.</b>	<b>1996</b>
<b>2160-2170 MHz</b>	<b>SPACE-TO-EARTH</b>	<b>REGION 2</b>	<b>2005</b>
		<b>U.S.</b>	<b>1996</b>
<b>2170-2200 MHz</b>	<b>SPACE-TO-EARTH</b>	<b>GLOBAL</b>	<b>2005</b>
		<b>U.S.</b>	<b>1996</b>

**Spectrum Requirements for Iridium type Communications  
assuming 16.5 MHz available at L Band)**



1970-1979 99 1980-1989 99



ola Inc.







ala Inc.

**FEASIBILITY OF SHARING**

- **2160-2200 MHz DOWNLINK BANDS: SHARING WITH FIXED SERVICE NOT POSSIBLE**

- • **RR 746X ADOPTED AT WARC-92 HAS COORDINATION TRIGGER OF -142 TO -152 dBW/m<sup>2</sup>/4 kHz**

**IRIDIUM REQUIRES PFD OF AT LEAST -120 dBW/m<sup>2</sup>/4 kHz**

- • **SHARING BY GEOGRAPHIC SEPARATION IS FEASIBLE ONLY WITHIN LARGE AREAS (E.G., ITU REGIONS). IRIDIUM CANNOT USE DIFFERENT FREQUENCIES IN AREAS AS SMALL AS THE U.S.**
- **1970-1990 MHz UPLINK BAND: SHARING WITH FIXED SERVICE WOULD BE DIFFICULT GIVEN NUMBER AND DISTRIBUTION OF MICROWAVE LINKS**

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## **SHARING - CON'T**

- **1990-2010 MHz UPLINK BAND: SHARING WITH BROADCAST AUXILIARY SERVICE (FIXED STLs & TEMP-FIXED ENG) MAY BE POSSIBLE IF DIRECTION OF MSS LINK IS REVERSED**
- • **MOTOROLA STUDYING POSSIBILITY OF DOWNLINK SHARING IN THIS BAND WITH UPLINK AT 2180-2200 MHz**
  - • • **POSSIBILITY THAT DOWNLINK SIGNAL LEVELS WOULD NOT EXCEED THE THRESHOLDS OF TV REMOTE PICKUP UNITS**
  - • • **WOULD REQUIRE FUTURE WARC TO REVERSE ALLOCATION DIRECTIONS**
- • **ALTERNATIVE: REALLOCATE 1990-2008 MHz (I.E., 1 CHANNEL) FROM BROADCAST AUXILIARY TO MSS?**
  - • • **WOULD STILL LEAVE BROADCASTERS WITH ANOTHER 6 CHANNELS UP TO 2110 MHz (WITH MANY OTHER CHANNELS AVAILABLE IN OTHER BANDS)**

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## **SHARING - CON'T**

- **MOTOROLA IS ACTIVELY PARTICIPATING IN CCIR TASK GROUP 12/4 (SHARING ISSUES BETWEEN MSS AND TERRESTRIAL SERVICES IN THE 1-3 GHz RANGE) AND IN TASK GROUP 8/1 (FPLMTS)**
- **TERRESTRIAL FPLMTS ALLOCATIONS IN OTHER PARTS OF WORLD COMPLICATES SHARING SCENARIO (E.G., BANDS CLEARED FOR MSS USE IN U.S. MAY BE USED FOR TERRESTRIAL FPLMTS IN EUROPE)**

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**ESTIMATED COST OF CLEARING THE 2 GHz BANDS IN LILC**

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**CONCLUSIONS**

- **2 GHz MSS ALLOCATIONS SHOULD BE RETAINED IN FULL**
- **NEED 2 GHz LICENSE BY 1999 IN ORDER TO MEET SECOND GENERATION SPECTRUM REQUIREMENTS (ASSUMES 2 YEARS TO CONSTRUCT AND LAUNCHES INITIATED 2 YEARS PRIOR TO OPERATIONAL DATE)**
- **DOES NOT APPEAR TO BE ECONOMICALLY FEASIBLE FOR MSS PROVIDERS TO PAY TO CLEAR SPECTRUM**
- **SPECTRUM REPLACEMENT PLAN FOR INCUMBENTS SHOULD BE IN PLACE BY 1996 IN ORDER TO PROVIDE A POTENTIALLY ADEQUATE AMORTIZATION PERIOD FOR EXISTING EQUIPMENT**